



PATENT
Docket No. 7034312001

CERTIFICATE OF MAILING

I hereby certify that this paper (along with any referred to as being attached or enclosed) is being deposited with the United States Postal Service with sufficient postage as "Express Mail to Addressee" in an envelope addressed to: Mail Stop RCE, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on the date indicated below.

Dated: 4-17-06

Laura A. Huntington
Laura A. Huntington

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application for:

Jonathan D. Klein et al.

Confirmation No.: 7098

Serial No.: 10/727,775

Examiner: Christopher B. Shin

Filing Date: December 3, 2003

Group Art Unit: 2182

For: Method and Mechanism of Accessing
Segments in Data Storage Systems

INFORMATION DISCLOSURE STATEMENT

Mail Stop RCE
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

In accordance with 37 CFR §§ 1.97 and 1.98, the items identified in this Information Disclosure Statement (IDS) are being brought to the attention of the Office. The items are listed on the attached forms PTO/SB/08A and PTO/SB/08B. The Examiner is requested to make these documents of record.

The items identified in this IDS may or may not be "material" pursuant to 37 CFR § 1.56. The submission thereof by Applicant(s) is not to be construed as an admission that any such patent, publication or other information referred to therein is material or considered to be material (37 CFR § 1.97(h)), or even qualifies as "prior art" under 35 USC § 102 with respect to this invention unless specifically designated by Applicant(s) as such.

1. Timing of the Information Disclosure Statement:

This IDS is believed to be timely in that it is being submitted under 37 CFR § 1.97(b), that is (1) with the new patent application submitted herein (37 CFR § 1.97(a)); or (2) within

three months of the filing date of the application, which is not a continued prosecution application filed under § 1.53(d) or (3) within three months of entry of the national stage as set forth in 37 CFR § 1.491; or (4) before the mailing of a first Office action on the merits; or (5) before the mailing of a first Office action after filing a request for continued examination under § 1.114. Thus, no fee is required.

- However, if the undersigned is in error in this regard, Applicant(s) respectfully requests that the Office consider this IDS as filed under 37 CFR § 1.97(c), if applicable, and charge the fee due under 37 CFR § 1.17(p) to the deposit account referenced below.
- However, if the undersigned is in error in this regard, Applicant(s) respectfully requests that the Office consider this IDS as filed under 37 CFR § 1.97(c), if applicable, and a statement under 37 CFR § 1.97(e) is included below, thus no fee is required.
- This IDS is being submitted under 37 CFR § 1.97(c), that is after mailing of a first Office Action on the merits, but before a Final Action under 37 CFR § 1.113 or a Notice of Allowance under 37 CFR § 1.311.
 - Charge the fee due under 37 CFR § 1.17(p) to the deposit account referenced below.
 - The fee due under 37 CFR § 1.17(p) is being concurrently submitted with the filing of an electronic IDS submission. Thus, no additional fee is required.
 - A statement under 37 CFR § 1.97(e) is included below, thus no fee is required. In the event that this IDS is not received before a Final Action or a Notice of Allowance, then Applicant(s) respectfully requests that the Office consider the filing of these papers to be submitted under 37 CFR § 1.97(d) and charge the fee due under 37 CFR § 1.17(p) to the deposit account referenced below.
- This IDS is being submitted under 37 CFR § 1.97(d), that is after a Final Action under 37 CFR § 1.113 or a Notice of Allowance under 37 CFR § 1.311, but before payment of the issue fee. A statement under 37 CFR § 1.97(e) is included below. Charge the fee due under 37 CFR § 1.17(p) to the deposit account referenced below.
- This IDS is being submitted under 37 CFR § 1.97(i), that is after a Final Action under 37 CFR § 1.113 or a Notice of Allowance under 37 CFR § 1.311, but before payment of the issue fee.

STATEMENT UNDER 37 CFR § 1.97(e):

- That each item of information contained in the IDS was first cited in any communication

from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the IDS; or

That no item of information contained in the IDS was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the IDS was known to any individual designated in 37 CFR § 1.56(c) more than three months prior to the filing of the IDS.

2. Copies of the Cited Items:

Copies of all of the items listed on the attached forms PTO/SB/08B are enclosed.

Copies of only the following items listed on the attached forms PTO/SB/08A (Item No. 1) and PTO/SB/08B (Item Nos. *) are enclosed.

Copy of the following item listed on the attached form PTO/SB/08A (Item No. 1) is not enclosed. See 37 CFR 1.98(a)(2)(i).

Copies of the following documents listed in PTO/SB/08A (Item Nos. *) and PTO/SB/08B (Item Nos. *) are not supplied as they were previously cited by the Office or submitted in Information Disclosure Statements in related applications (Application No. *, filed *) and relied upon in this application for an earlier filing date under 35 USC § 120. See 37 CFR § 1.98(d). The Examiner is requested to make these documents of record.

Copies of the following items listed on the attached forms PTO/SB/08A (Item Nos. *) and PTO/SB/08B (Item Nos. *) were cited in a foreign examination report in a related case. A copy of the search report and the cited references not already of record in this application are attached hereto.

3. Concise Explanation of Relevance:

A concise explanation of relevance of the items listed on forms PTO/SB/08A and PTO/SB/08B is not given.

A concise explanation of relevance of [some of] the items listed on forms PTO/SB/08A and PTO/SB/08B is in the form of an English language copy of a Search Report from a foreign

patent office, issued in a counterpart application, which refers to the relevant portions of the references (copy attached).

4. Related Applications:

Applicant(s) brings to the Office's attention the following related application(s): U.S. Patent Application No. * filed *, now U.S. Patent No. *.

5. Conclusion:

Citation of the above documents shall not be construed as:

1. an admission that the documents are necessarily prior art with respect to the instant invention;
2. a representation that a search has been made, other than as described above; and
3. an admission that the information cited herein is, or is considered to be, material to patentability as defined in § 1.56(b).

It is respectfully requested that the Examiner indicate consideration of the cited references by returning a copy of the attached forms PTO/SB/08A and PTO/SB/08B with initials or other appropriate marks. In the unlikely event that the transmittal letter is separated from this document and the U.S. Patent Office determines that an extension and/or other relief is required, Applicant(s) petitions for any required relief including extensions of time and authorizes the Commissioner to charge the cost of such petitions and/or other fees due in connection with the filing of this document to **Deposit Account No. 50-2518**, referencing **OI7034312001**. However, the Commissioner is not authorized to charge the cost of the issue fee to the Deposit Account.

Respectfully submitted,

Dated: 4/17/06

By: Gerald Chan
Gerald Chan
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PTO/SB/08A (07-05)

Approved for use through 07/31/2006. OMB 0651-0031

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(use as many sheets as necessary)

Sheet 1 of 4

Complete if Known

Application Number	10/727,775
Filing Date	December 3, 2003
First Named Inventor	Jonathan D. Klein
Art Unit	2182
Examiner Name	Christopher B. Shin
Attorney Docket Number	017034312001

U.S. PATENT DOCUMENTS

FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No. ¹	Foreign Patent Document	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T ⁶
		Country Code ³ - Number ⁴ - Kind Code ⁵ (if known)				

patent document. 5 Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. 6 Applicant is to place a check mark here if English language Translation is attached.

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

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OTHER PRIOR ART – NON PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No. ¹	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher city and/or country where published	T ²
	1	ACHARYA, A. et al., "Tuning the Performance of I/O-Intensive Parallel Applications", <i>Proceedings of the 4th Workshop on I/O in Parallel and Distributed Systems</i> , ACM Press, 1996, pp. 15 - 27, USA.	
	2	BAGRODIA, R. et al., "Parallel Simulation of Parallel File Systems and I/O Programs, <i>Proceedings of the 1997 ACM/IEEE Conference on Supercomputing (CDROM)</i> , ACM Press, 1997, pp. 1 - 16.	
	3	BORDAWEKAR, R. et al., "A Model and Compilation Strategy for Out-of-Core Data Parallel Programs", ACM SIGPLAN Notices, <i>Proceedings of the 5th ACM SIGPLAN Symposium on Principles and Practice of Parallel Programming PPOPP</i> , 1995, Volume 30, Issue 8, pp. 1 - 10.	
	4	BORDAWEKAR, R. et al., "Automatic Optimization of Communication in Compiling Out-of-core Stencil Codes, <i>Proceedings of the 10th International Conference on Supercomputing</i> ; ACM Press, 1996, pp. 366 - 373, USA.	
	5	BORDAWEKAR, R. et al., "Communication Strategies for Out-of-Core Programs on Distributed Memory Machines", <i>Proceedings of the 9th International Conference on Supercomputing</i> , ACM Press, 1995, pp. 395 - 403, Spain.	
	6	BORDAWEKAR, R. et al., "Design and Evaluation of Primitives for Parallel I/O", <i>Proceedings of the 1993 ACM/IEEE Conference on Supercomputing</i> , ACM Press, 1993, pp. 452 - 461.	
	7	BORDAWEKAR, R., "Implementation of Collective I/O in the Intel Paragon Parallel File System: Initial Experiences", <i>Proceedings of the 11th International Conference on Supercomputing</i> , ACM Press, 1997, pp. 20 - 27, Austria.	
	8	CHEN, Y. et al., "Optimizing Collective I/O Performance on Parallel Computers: A Multisystem Study", <i>Proceedings of the 11th International Conference on Supercomputing</i> , ACM Press and IEEE Computer Society, 1997, pp. 28 - 35, Austria.	
	9	CHEN, Y., et al., "Automatic Parallel I/O Performance Optimization in Panda", <i>Proceedings of the 10th Annual ACM Symposium on Parallel Algorithms and Architectures</i> , ACM, 1998, pp. 108 - 118, Mexico.	
	10	CORBETT, P., et al., "The Vesta Parallel File System", <i>ACM Transactions on Computer Systems</i> , ACM Press, Vol. 14, no. 3, pp. 225 - 264.	
	11	CORTES, T., et al., "Design Issues of a Cooperative Cache with No Coherence Problems", <i>Proceedings of the 5th Workshop on I/O in Parallel and Distributed Systems</i> , ACM Press, 1997, pp. 37 - 46.	
	12	DEL ROSARIO, J. et al., "Improved Parallel I/O via a Two-phase Run-Time Access Strategy", <i>ACM SIGARCH Computer Architecture News</i> , 1993, Vol. 21 No. 5, pp. 31 - 38.	
	13	DICKENS, P., "An Evaluation of Java's I/O Capabilities for High-Performance Computing", <i>Proceedings of the ACM 2000 Conference on Java Grande</i> , ACM, 2000, pp. 26 - 35, USA.	
	14	FERREIRA, R. et al., "Compiling Object-Oriented Data Intensive Applications", <i>Proceedings of the 14th International Conference on Supercomputing</i> , ACM Press, 2000, pp. 11 - 21, USA.	
	15	GIBSON et al., "Strategic Directions in Storage I/O Issue in Large-Scale Computing", <i>ACM Computing Surveys (CSUR)</i> , ACM Press, 1996, Vol. 28 No. 4, pp. 779 - 793.	
	16	GROSS, T. et al., "Architecture Implications of High-Speed I/O for Distributed-Memory Computers", <i>Proceedings of the 8th International Conference on Supercomputing</i> , ACM Press, 1994, pp. 176 - 185, U.K.	
	17	HARRY, M. et al., "The Design of VIP-FS: A Virtual, Parallel File System for High Performance Parallel and Distributed Computing", <i>ACM SIGOPS Operating Systems Review</i> , ACM Press, 1995, Vol. 29 No. 3, pp. 35 - 48.	

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¹ Applicant's unique citation designation number (optional). ² Applicant is to place a check mark here if English language Translation is attached.

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Sheet 3 of 4

Complete if Known

Application Number	10/727,775
Filing Date	December 3, 2003
First Named Inventor	Jonathan D. Klein
Art Unit	2182
Examiner Name	Christopher B. Shin

Attorney Docket Number

OI7034312001

OTHER PRIOR ART – NON PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No. ¹	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher city and/or country where published	T ²
	1	KOTZ, D. et al., "Dynamic File-Access Characteristics of a Production Parallel Scientific Workload", <i>Proceedings of the 1994 ACM/IEEE Conference on Supercomputing</i> , ACM Press, 1994, pp. 640 - 649.	
	2	KOTZ, D. et al., "Flexibility and Performance of Parallel File Systems", <i>SIGOPS Operating Systems Review</i> , ACM Press, 1994, Volume 30 Issue 2, pp 63 - 73.	
	3	KOTZ, D., "Disk-Directed I/O for MIMD Multiprocessors", <i>ACM Transactions on Computer Systems (TOCS)</i> , ACM Press, Vol.15, No. 1, February 1997, pp. 41 - 74, USA.	
	4	KRIEGER, O. et al., "A Performance-Oriented Flexible File System based on Building-Block Compositions", <i>Proceedings of the 4th Workshop on I/O in Parallel and Distributed Systems</i> , ACM Press, 1996, pp. 95 - 108, USA.	
	5	KRIEGER, O. et al., "HFS: A Performance-Oriented Flexible File System Based on Building-Block Compositions", <i>ACM Transactions on Computer Systems (TOCS)</i> , ACM Press, Vol. 15 No. 3, ACM, 1997, pp. 286-321.	
	6	KURC, T. et al., "Querying Very Large Multi-Dimensional Datasets in ADR", <i>Proceedings of the 1999 ACM/IEEE Conference on Supercomputing</i> , ACM Press, 1999, pp. 1 - 15, USA.	
	7	LEE, J. et al., "Active Buffering Plus Compressed Migration: An Integrated Solution to Parallel Simulations' Data Transport Needs", <i>Proceedings of the 16th International Conference on Supercomputing</i> , ACM Press, 2002, pp. 156 - 166, New York, New York, USA.	
	8	MACHE, J. et al., "The Impact of Spatial Layout of Jobs of Parallel I/O Performance", <i>Proceedings of the 6th Workshop on I/O in Parallel and Distributed Systems</i> , ACM Press, 1999, pp. 45 - 56, USA.	
	9	MADHYASTHA, T. et al., "Informed Prefetching of Collective Input/Output Requests", <i>Proceedings of the 1999 ACM/IEEE Conference on Supercomputing</i> , ACM Press, 1999, pp. 1 - 16, USA.	
	10	MOORE, J.A. et al., "Efficient Data-Parallel Files via Automatic Mode Detection", <i>Proceedings of the 4th Workshop on I/O in Parallel and Distributed Systems</i> , ACM Press, 1996, pp. 1 - 14, USA.	
	11	NIEUWEJAAR, N. et al., "Performance of the Galley Parallel File System", <i>Proceedings of the 4th Workshop on I/O in Parallel and Distributed Systems: Part of the Federated Computing Research Conference</i> , ACM Press, 1996, pp. 83 - 94, USA.	
	12	NO, J. et al., "Integrating Parallel File I/O and Database Support for High-Performance Scientific Data Management", <i>Proceedings of the 2000 ACM/IEEE Conference on Supercomputing (CDROM)</i> , IEEE Computer Society, pp. 1 - 13, USA.	
	13	PARK, Y. et al., "Virtual Memory Versus File Interfaces for Large, Memory-Intensive Scientific Applications", <i>Proceedings of the 1996 ACM/IEEE Conference on Supercomputing (CDROM)- Volume 00 Supercomputing '96</i> , ACM Press, IEEE Computer Society, 1996, pp. 1 - 20.	
	14	PURAKAYASTHA, A. et al., "ENWRICH: A Compute-Processor Write Caching Scheme for Parallel File Systems", <i>Proceedings of the 4th Workshop on I/O in Parallel and Distributed Systems</i> , ACM Press, 1996, pp. 55 - 68.	
	15	SHEN, X. et al., "A Novel Application Development Environment for Large-Scale Scientific Computations", <i>Proceedings of the 14th International Conference on Supercomputing</i> , ACM Press, 2000, pp. 274 - 283, USA.	
	16	SHUF, Y. et al., "Characterizing the Memory Behavior of JAVA Workloads: A Structured View and Opportunities for Optimization", <i>Proceedings of the 2001 ACM SIGMETRICS International Conference on Measurement and Modeling of Computer Systems SIGMETRICS '01</i> , ACM Press, 2001, Vol. 29 No. 1, pp. 194 - 205.	

* EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

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Sheet 4 of 4

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Attorney Docket Number	OI7034312001

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